Exhibit A

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On the cover: Photomicrograph of crystals of vitamin B_1.
(*Dennis Kunkel, University of Hawaii*)

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In addition, material has been drawn from the following references: R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology*, White Sands Missile Range, New Mexico, National Bureau of Standards, AD 467-424; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

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CAULERPACEAE

Caulerpa showing the stolonlike branches, rhizoidal branches, and erect featherlike frond typical of the Caulerpaceae.

CAULOBACTERACEAE

Electron micrograph of *Caulobacter*. (Courtesy of J. Wachsman)

Cauchy relations [SOLID STATE] A set of six relations between the compliance constants of a solid which should be satisfied provided the forces between atoms in the solid depend only on the distances between them and act along the lines joining them, and provided that each atom is a center of symmetry in the lattice. { kō·shē ri'lā·shənz }

Cauchy residue theorem [MATH] The theorem expressing a line integral around a closed curve of a function which is analytic in a simply connected domain containing the curve, except at a finite number of poles interior to the curve, as a sum of residues of the function at these poles. { kō·shē 'rez·ə,dü ,thir·əm }

Cauchy-Riemann equations [MATH] A pair of partial differential equations that is satisfied by the real and imaginary parts of a complex function $f(z)$ if and only if the function is analytic: $\partial u/\partial x = \partial v/\partial y$ and $\partial u/\partial y = -\partial v/\partial x$, where $f(z) = u + iv$ and $z = x + iy$. { kō·shē 'rē,män i'kwā·zhənz }

Cauchy-Schwarz inequality [MATH] The square of the inner product of two vectors does not exceed the product of the squares of their norms. Also known as Buniakowski's inequality; Schwarz' inequality. { kō·shē 'shwôrts in·i'kwäl·ad·ē }

Cauchy sequence [MATH] A sequence with the property that the difference between any two terms is arbitrarily small provided they are both sufficiently far out in the sequence; more precisely stated: a sequence $\{a_n\}$ such that for every $\epsilon > 0$ there is an integer N with the property that if n and m are both greater than N, then $|a_n - a_m| < \epsilon$. Also known as fundamental sequence. { kō·shē 'sē·kwəns }

Cauchy's mean-value theorem See second mean-value theorem. { kō·shēz ,mēn ,val·yü 'thir·əm }

Cauchy's test for convergence [MATH] 1. A series is absolutely convergent if the limit as n approaches infinity of its nth term raised to the $1/n$ power is less than unity. 2. A series a_n is convergent if there exists a monotonically decreasing function f such that $f(n) = a_n$ for n greater than some fixed number N, and if the integral of $f(x)dx$ from N to ∞ converges. Also known as Cauchy integral test; Maclaurin-Cauchy test. { kō·shēz ,test fər kən'vər·jəns }

Cauchy surface [RELAT] A surface S in a space-time M is a (global) Cauchy surface if every nonspacelike curve in M intersects S exactly once; that is, the Cauchy development of S equals M. { kō·shē ,sər·fəs }

Cauchy transcendental equation [MATH] An equation whose roots are characteristic values of a certain type of Sturm-Liouville problem: $\tan \sigma = (k + K)/(\sigma^2 - kK)$, where k and K are given, and σ is to be determined. { kō·shē 'trans,en'dent·əl i'kwä·zhən }

cauda equina [ANAT] The roots of the sacral and coccygeal nerves, collectively; so called because of their resemblance to a horse's tail. { 'kaûd·ə i'kwīn·ə }

caudal [ZOO] Toward, belonging to, or pertaining to the tail or posterior end. { 'kòd·əl }

caudal artery [VERT ZOO] The extension of the dorsal aorta in the tail of a vertebrate. { 'kòd·əl 'ard·ə·rē }

caudal vertebra [ANAT] Any of the small bones of the vertebral column that support the tail in vertebrates; in humans, three to five are fused to form the coccyx. { 'kòd·əl 'vərt·ə·brə }

Caudata [VERT ZOO] An equivalent name for Urodela. { kaû'dad·ə }

caudate [ZOO] 1. Having a tail or taillike appendage. 2. Any member of the Caudata. { 'kò,dāt }

caudate lobe [ANAT] The tailed lobe of the liver that separates the right extremity of the transverse fissure from the commencement of the fissure for the inferior vena cava. { 'kò,dāt 'lōb }

caudate nucleus [ANAT] An elongated arched gray mass which projects into and forms part of the lateral wall of the lateral ventricle. { 'kò,dāt 'nü·klē·əs }

caudex [BOT] The main axis of a plant, including stem and roots. { 'kò,deks }

caudicle [BOT] A slender appendage attaching pollen masses to the stigma in orchids. { 'kòd·ə·kəl }

Cauer form [ELEC] A continued fraction expansion of the impedance used in the network synthesis for a driving point function resulting in a ladder network. { 'kaû·ər ,fòrm }

caul [ENG] A sheet of metal or other material that is heated and used to equalize pressure during fabricating plywood, shaping surface veneer, and hot-pressing composite materials. { kòl }

cauldron subsidence [GEOL] 1. A structure formed by the lowering along a steep ring fracture of a more or less cylindrical block, usually 1 to 10 miles (1.6 to 16 kilometers) in diameter, into a magma chamber. 2. The process of forming such a structure. { 'kòl·drən səb'sīd·əns }

Caulerpaceae [BOT] A family of green algae in the order Siphonales. { ,kò·lər'pās·ē,ē }

caulescent [BOT] Having an aboveground stem. { kò'les·ənt }

cauliflorous [BOT] Producing flowers on the older branches or main stem. { ,kòl·ə'flòr·əs }

cauliflory [BOT] Of flowers, growth on the main stem of limbs of a tree. { 'kòl·ə,flòr·ē }

cauliflower [BOT] *Brassica oleracea* var. *botrytis*. A biennial crucifer of the order Capparales grown for its edible white head or curd, which is a tight mass of flower stalks. { 'kòl·ə,flaû·ər }

cauliflower disease [PL PATH] 1. A disease of the strawberry plant caused by the eelworm and manifested as clustered, puckered, and malformed leaves. 2. A bacterial disease of the strawberry and some other plants caused by *Corynebacterium fascians*. { 'kòl·ə,flaû·ər di,zēz }

cauline [BOT] Belonging to or arising from the stem, particularly if on the upper portion. { 'kò,līn }

caulk Also spelled calk. [ENG] To make a seam or point airtight, watertight, or steamtight by driving in caulking compound, dry pack, lead wool, or other material. [MATER] Material used to caulk seams. { kòk }

caulking compound [MATER] A heavy paste, such as a synthetic, containing a polysulfide rubber and lead peroxide curing agent, or a natural product such as oakum, used for caulking. { 'kòk·iŋ ,käm,paûnd }

caulking iron [DES ENG] A tool for applying caulking to a seam. { 'kòk·iŋ ,ī·ərn }

Caulobacter [MICROBIO] A genus of prosthecate bacteria; cells are rod-shaped, fusiform, or vibrioid and stalked, and reproduction is by binary fission of cells. { ,kòl·ō'bak·tər }

Caulobacteraceae [MICROBIO] Formerly a family of aquatic stalked, gram-negative bacteria in the order Pseudomonadales. { ,kòl·ə,bak·tə'rās·ē,ē }

caulocarpic [BOT] Having stems that bear flowers and fruit every year. { ,kòl·ō'kär,pik }

Caulococcus [MICROBIO] A genus of bacteria of uncertain affiliation; coccoid cells may be connected by threads; reproduces by budding. { ,kòl·ō'käk·əs }

caulome [BOT] The stem structure or stem axis of a plant as a whole. { 'kò,lōm }

causal boundary [RELAT] A boundary attached to a space-time that depends only on the causal structure; it does not distinguish between boundary points at finite distances (singularities) or those at infinity. Also known as C boundary. { 'kòz·əl 'baûn·drē }

causal curve [RELAT] A curve in space-time that is nowhere spacelike. { 'kòz·əl 'kərv }

causal future [RELAT] The causal future relative to a set of points S in a space-time M is the set of points in M which can be reached from S by future-directed timelike or null curves. { 'kòz·əl 'fyü·chər }

causalgia [MED] A sensation of burning pain, especially of the palms and soles, which may be of psychic or organic origin. { kò'zal·jē·ə }

causality [MECH] In classical mechanics, the principle that the specification of the dynamical variables of a system at a given time, and of the external forces acting on the system, completely determines the values of dynamical variables at later times. Also known as determinism. [PHYS] 1. The principle that an event cannot precede its cause; in a relativistic theory an event cannot have an effect outside its future light cone. In relativistic quantum field theory, the principle that the field operators at different space-time points commute (for boson fields; anticommute in the case of fermion fields) if the separation of the points is spacelike. [QUANT MECH] The principle that the specification of the dynamical state of a system at a given time, and of the interaction of the system with its environment, determines the dynamical state of the system at later times, from which a probability distribution for the observation of any dynamical variable may be determined. Also known as determinism. [SCI TECH] The existence of regularities which control natural phenomena. { kò'zal·əd·ē }